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Code No. : 12006 O2

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. I Year II-Semester Backlog Examinations, May-2017

Engineering Chemistry-II
(CSE, ECE, IT)

Time: 3 hours

Max. Marks: 50

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (15 Marks)

1. Equivalent conductance 0.1 N sodium sulphate solution is 36.5 S.Cm²/eq. Calculate its molar conductance at same temperature. [1]
2. Write the advantages and applications of lithium-ion batteries. [1]
3. Why does corrosion occur to steel pipe connected to copper plumbing? [1]
4. Calculate the number of degrees of freedom at triple point in water system. [1]
5. What is liquid crystalline state? [1]
6. Calculate the single electrode potential of copper metal in contact with 0.1 M CuSO₄ solution (standard electrode Potential of Cu is 0.34V). [2]
7. Distinguish between primary and secondary cells. [2]
8. Explain the principle of electroplating. [2]
9. List any four important applications of nanomaterials. [2]
10. What are safety fuses and solders? [2]

Part-B (5 × 7 = 35 Marks)

11. a) What is quinhydrone electrode? Explain the determination of pH of a solution by using it. [4]
b) The resistance of a 0.1 N solution of a salt is found to be 210 ohms with a conductance cell of cell constant 0.90 cm⁻¹. Calculate the equivalent conductance of the solution. [3]
12. a) Explain about nickel-cadmium battery. What are its advantages and applications? [4]
b) Describe the construction and working of Zinc-Carbon battery. [3]
13. a) Explain differential aeration corrosion with mechanism. [4]
b) What is cathodic protection? Explain the sacrificial anodic protection method. [3]
14. a) Draw a well labeled phase diagram for one component system. Explain it by applying phase rule. [4]
b) State and explain Gibbs Phase Rule. [3]
15. a) Explain vapor deposition and sol-gel method of preparation of nanomaterials. [4]
b) Discuss the applications of liquid crystals. [3]
16. a) Differentiate between galvanic and electrochemical series. [4]
b) Write a note on phosphoric acid fuel cell. [3]
17. Answer any **two** of the following: [7]
 - a) Factors influencing rate of corrosion.
 - b) Applications of membranes.
 - c) Molecular ordering in liquid crystals.
